

CLAIMS

1. A method for excising at least one sample in an array of samples comprising:
 - (a) recording an electronic image of the position of at least one sample relative to the other samples in the array;
 - (b) utilising the recorded image to control a cutting tool to excise the at least one sample;
 - (c) picking up and the excised sample in the cutting tool retaining the same in the cutting tool and moving the cutting tool relative to a selected location; and
 - (d) depositing the at least one excised sample at the selected location.
2. An apparatus for excising at least one sample from an array of samples comprising:-
 - (a) means for recording an electronic image of the position of at least one sample relative to the other samples in the array;
 - (b) means for utilising the recorded electronic image to control a cutting tool to excise the at least one sample from the array and retain the sample in the tool;
 - (c) means for moving the cutting tool relative to a selected location; and
 - (d) means for causing the cutting tool to deposit the at least one excised sample at the selected location;

the arrangement being such that means (b) causes the cutting tool to excise the at least one sample according to the position of the sample relative to the other samples in the array as determined by means (a).
3. ~~The apparatus of claim 2~~ further comprising:
 - e) a table means for supporting the array of samples;
 - f) display means for displaying the electronic image of the array on a screen or the like;
 - g) means for selecting a sample on the array for excising by the cutting tool; and
 - h) means for moving the table means relative to the cutting tool in the plane of the array.
4. ~~The apparatus of claim 3~~ wherein the means for recording an electronic image of at least one sample is an apparatus which acquires a

digital image such as a digital camera or a digital scanner, the control means includes a computer and an image file relating to a number of arrays of samples is stored on the computer.

A

5. *The apparatus of claim 3* wherein the array of samples is in a plane, 5 the x-y plane, and the table means is movable in both the x and y directions so that the spot to be excised is placed underneath the cutting tool which moves along the z axis direction and which preferably also rotates about the z axis in order to facilitate cutting of the sample.

6. *A cutting tool for use in the apparatus of claims 2 to 5 or method of claim 1* comprising:

10 a cutting head defining a central bore adapted to cut and retain a sample of material;

15 a plunger disposed in the bore defining a rod which is disposed in and movable along the bore, the plunger being either formed of a ferro-magnetic material or having a portion of ferro-magnetic material attached thereto; and

20 a solenoid disposed around the plunger or electromagnetic material, wherein operation of the solenoid causes the plunger to move to eject the spot from the cutting head.

25 7. *A cutting tool for use in the apparatus of any one of claims 2 to 6 or the method of claim 1* comprising:

- (a) a cutting tip means having a bore therethrough;
- (b) a cutting tip holder for holding the cutting tip means;
- (c) an ejector pin one end of which is disposed in bore of the cutting tip, the pin being moveable along the bore of the cutting tip;
- (d) a magnet or a piece of ferromagnetic material integral with or attached to the ejector pin distal from the one end;
- (e) a solenoid disposed around the magnet or ferro magnetic material for causing the pin to move in the bore in a direction which expels material from the cutting tip when the solenoid is energised; and

30 return means for causing the pin to move in the opposite direction when the solenoid is not energised.

35 8. *The cutting tool as claimed in claim 7* wherein a magnet is attached to the ejector pin distal from the one end and wherein the return means is also a magnet.

A

TO DO LIST

MA

09/509215

422 Rec'd PCT/PTO 24 MAR 2000

WO 99/15875

PCT/AU98/00813

The

14
of claim 7

14

9. A cutting tool as claimed in claim 7 wherein the return means is a spring.

10. THE cutting tool as claimed in any preceding claim wherein the cutting tip is removable and disposable.

11. THE cutting tool as claimed in any of claims 7 to 10 wherein the cutting tool includes a body portion comprising a generally cylindrical tube defining a central bore, in which the solenoid is disposed, with the lower end of the bore being closed by the cutting tip holder.

12. THE cutting tool as claimed in any of claims 7 to 11 wherein the cutting tip has an annular cross section with a wider cylindrical portion which locates inside of the central bore of the body portion and tapers in a generally conical fashion to a narrow portion which forms the cutting head, the tip being made of a translucent material such as plastic or glass.